



The International year of soils: thoughts on future directions for experiments in soil erosion research

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The 2015 UN Year of Soils (IYS), implemented by the FAO, aims to increase awareness and understanding of the importance of soil for food security and essential ecosystem functions. The IYS has six specific objectives, ranging from raising the awareness among civil society and decision makers about the profound importance of soils, to the development of policies supporting the sustainable use of the non-renewable soil resource. For scientists and academic teachers using experiments to study soil erosion processes, two objectives appear of particular relevance. First is need for the rapid capacity enhancement for soil information collection and monitoring at all levels (global, regional and national). While at first glance, this objective appears to relate mostly to traditional mapping, sampling and monitoring, the threat of large-scale soil loss, at least with regards to their ecosystem services, illustrates the need for approaches of studying soils that avoids such irreversible destruction. Relying on often limited data and their extrapolation does not cover this need for soil information because rapid change of the drivers of change itself carry the risk of unprecedented soil reactions not covered by existing data sets. Experiments, on the other hand, offer the possibility to simulate and analyze future soil change in great detail. Furthermore, carefully designed experiments may also limit the actual effort involved in collecting the specific required information, e.g. by applying tests designed to study soil system behavior under controlled conditions, compared to field monitoring. For rainfall simulation, experiments should therefore involve the detailed study of erosion processes and include detailed recording and reporting of soil and rainfall properties. The development of a set of standardised rainfall simulations would widen the use data collected by such experiments. A second major area for rainfall simulation lies in the education of the public about the crucial role soil plays in food security, climate change adaptation and mitigation, essential ecosystem services, poverty alleviation and sustainable development. While erosion monitoring and modeling, as well as erosion risk assessment maps provide a solid foundation for decision makers, the attention of the public for "dirt" is often much easier to achieve by setting up a rainfall simulation experiment that illustrates the connection between a process, such as rainfall and runoff observed in daily life, and its causes and consequences. Exploring the potential of rainfall simulation experiments as an outreach tool should therefore be part of the soil science, geomorphology and hydrology community during the IYS 2015 and beyond.